WHAT IS CLAIMED IS:

1. A method for producing porous silicon, the method comprising steps of:

depositing a thin discontinuous layer of metal on a Si surface;

etching the Si surface in a HF and oxidant solution, said etching being conducted without external electrical bias.

2. The method according to claim 1, wherein said step of etching is conducted in the absence of illumination.

3. The method according to claim 1, wherein said step of etching is conducted in the presence of illumination..

4. The method according to claim 1, wherein said metal comprises Pt.

5. The method according to claim 1, wherein said metal comprises Au.

6. The method according to claim 1, wherein said metal comprises Pd.

7. The method according to claim 1, wherein said metal comprises a combination of metals selected from the group of Au, Pt and Pd.

8. The method according to claim 1, wherein said oxidant comprises H_2O_2.

9. The method according to claim 1, wherein the thickness of said metal is less than approximately 10nm.

10. The method according to claim 1, wherein said etching is conducted for a time period between about 2 seconds and one hour.

11. A method for producing porous silicon, the method consisting of the following steps:

depositing a thin discontinuous layer of metal on a Si surface;

etching the Si surface in a HF and oxidant solution for a period of about two seconds up to 60 minutes, said etching being conducted without external electrical bias.

12. The method according to claim 11, wherein said step of etching is conducted in the absence of illumination.

13. The method according to claim 11, wherein said step of etching is conducted in the presence of illumination.

14. The method according to claim 11, wherein said metal comprises Pt.

15. The method according to claim 11, wherein said metal comprises Au.

16. The method according to claim 11, wherein said metal comprises Pd.

17. The method according to claim 11, wherein said metal comprises a combination of metals selected from the group of Au, Pt and Pd.

18. The method according to claim 11, wherein said oxidant comprises H_2O_2.

19. The method according to claim 11, wherein the thickness of said metal is less than approximately 10nm.

20. The method according to claim 11, wherein said etching is conducted for a time period between about 2 seconds and one hour.

21. A method for producing porous silicon, the method comprising steps of:

depositing metal on a Si surface in a thickness sufficient to permit nucleation that forms nanometer size metal particles and small enough to prevent formation of a continuous metal layer;

etching the Si surface in a HF and oxidant solution for a period of about two seconds up to 60 minutes, said etching being conducted without external electrical bias.